

## CLAIMS:

1. An arrangement for influencing magnetic particles in a region of action, which arrangement has:

a) means for generating a magnetic field having a pattern in space of its magnetic field strength such that a first sub-zone (301) having a low magnetic field strength and a

5 second sub-zone (302) having a higher magnetic field strength are formed in the region of action,

b) means for changing the position in space of the two sub-zones in the region of action so that the magnetization of the particles changes locally,

c) means for acquiring signals, which signals depend on the magnetization in the

10 region of action, which magnetization is influenced by the change in the position in space,

d) an analyzing unit for obtaining information, from the signals, on the magnetic particles in the region of action,

e) a control unit for controlling the means in such a way that

- in a first mode of operation, the position of the two sub-zones is changed, the  
15 signals resulting therefrom are acquired, and information on the spatial distribution of the magnetic particles in the region of action is determined from the signals,

- in a second mode of operation, the position in space of the two sub-zones is changed for so long, and at a frequency such, that at least part of the region of action is thereby heated up.

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2. An arrangement as claimed in claim 1, wherein, in a third mode of operation, the control unit controls the means in such a way that both the second mode of operation is executed and also, simultaneously, the signals resulting from the change in the position of the two sub-zones are acquired and information on the spatial distribution of the magnetic

25 particles in the region of action is determined therefrom.

3. An arrangement as claimed in claim 1, wherein the means for generating the magnetic field comprise a gradient coil arrangement for generating a gradient magnetic field that reverses its direction and has a zero crossing in the first sub-zone.

4. An arrangement as claimed in claim 1, wherein the two sub-zones in the region of action are shifted in position by a temporally variable magnetic field that is superimposed on the gradient magnetic field.

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5. An arrangement as claimed in claim 1, wherein the signals induced in the region of action by the temporal variation in the magnetization are received with the help of a coil arrangement.

10 6. A method for influencing magnetic particles in a region of action, which method has the following steps:

a) generation of a magnetic field having a pattern in space of its magnetic field strength such that a first sub-zone (301) having a low magnetic field strength and a second sub-zone (302) having a higher magnetic field strength are formed in the region of action,

15 b) changing the position in space of the two sub-zones in the region of action so that the magnetization of the particles changes locally,

c) acquiring signals that depend on the magnetization in the region of action, which magnetization is influenced by the above change in position,

d) analyzing the signals to obtain information on the spatial distribution of the 20 magnetic particles in the region of action,

e) defining a region for heating-up that is at least part of the region of action,

f) changing the position in space of the two sub-zones in the region of action for so long, and at a frequency such, that the region for heating-up that has been defined heats up.

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7. A method as claimed in claim 6, wherein steps c) and d) are performed in addition during the heating-up of the region for heating-up.